

phase and vice-versa. This process hides the pre-boot time and enables the charge pump circuit to run at a faster cycle time resulting in outputting more charge for a given size of a capacitor.

IN THE DRAWINGS

The office action objected to the absence of text labels in the boxes shown in Figures 10-13.

Applicant respectfully objects and requests the Examiner to provide a reference in M.P.E.P or 37 C.F.R. that describes the requirement of text labels in the boxes in figures.

IN THE CLAIMS

Please substitute the claim set in the appendix entitled Clean Version of Pending Claims for the previously pending claim set. The substitute claim set is intended to reflect amendment of previously pending claims 3-5, 8, 10, 19, and 20. The specific amendments to individual claims are detailed in the following marked-up set of claims.

3. (Twice Amended) A charge pump, comprising:

a plurality of phase generators;

first and second preboot capacitors coupled to the plurality of phase generators;

first and second main pump capacitors coupled to the plurality of phase generators, and the first and second preboot capacitors, respectively; [and]

first and second pre-boot pre-charge capacitors coupled to the first and second preboot capacitors;

first and second gating devices coupled to the first and second main pump capacitors, respectively; and

wherein the first and second main pump capacitors are prebooted to a first predetermined level by the first and second preboot capacitors during the first and second phases, respectively, wherein the first predetermined level moves to a second predetermined level in response to the plurality of phase generators during the first and second phases, respectively, wherein the second predetermined level is [moves]moved to a third predetermined level in response to the plurality

of phase generators during the first and second phases, respectively, and wherein the third predetermined level is dumped to the first and second gating devices, during the first and second phases, respectively.

4. (Once Amended) The charge pump of claim 3, wherein the plurality of phase generators [further comprises] comprises:

- a primary phase generator;
- a secondary phase generator coupled to the primary phase generator;
- first and second preboot capacitors coupled to the primary phase generator; and
- first and second main pump capacitors coupled to the secondary phase generator, and the first and second preboot capacitors, respectively.

5. (Twice Amended) A charge pump, comprising:

- an oscillator to generate a first and a second phase during a phase cycle;
- a primary phase generator coupled to the oscillator;
- a secondary phase generator coupled to the primary phase generator;
- first and second preboot capacitors coupled to the primary phase generator;
- first and second main pump capacitors coupled to the secondary phase generator, and the first and second preboot capacitors, respectively;

first and second pre-boot pre-charge capacitors coupled to the first and second preboot capacitors;

first and second gating devices coupled to the first and second main pump capacitors, respectively; and

wherein the first and second main pump capacitors are prebooted to a first predetermined level by the first and second preboot capacitors during the first and second phases, respectively, wherein the first predetermined level moves to a second predetermined level in response to the primary phase generator during the first and second phases, respectively, wherein the second predetermined level is [moves]moved to a third predetermined level in response to the secondary phase generator during the first and second phases, respectively, and wherein the third

predetermined level is dumped to the first and second gating devices, during the first and second phases, respectively.

8. (Once Amended) The charge pump of claim 5, wherein the secondary phase generator [comprising] comprises a delay circuit coupled to the primary phase generator, including an input receiving signals that are non-overlapping and crossing around high points of their signals from the primary phase generator, and providing an output signal [similar to the input signal, and] having a predetermined delay from the input signal.

10. (Once Amended) The charge pump of claim 8, wherein the first and second preboot capacitors are coupled to the primary phase generator to receive input signals that are non-overlapping and crossing around high points and low points of their signals, and [providing] provide an output signal to preboot the first and second main capacitors to a first predetermined level during the first and second phases, respectively.

19. (Twice Amended) A charge pump, comprising:
an oscillator to generate a first and a second phase during a phase cycle;
a primary phase generator coupled to the oscillator;
a secondary phase generator coupled to the primary phase generator;
first and second preboot capacitors coupled to the primary phase generator;
first and second main pump capacitors coupled to the secondary phase generator, and the first and second preboot capacitors, respectively;

first and second pre-boot pre-charge capacitors coupled to the first and second preboot capacitors;

first and second gating devices coupled to the first and second main pump capacitors, respectively; and

wherein the first and second main pump capacitors are prebooted to a first predetermined level of approximately in the range of about 1 to 5 volts by the first and second preboot capacitors during the first and second phases, respectively, wherein the first predetermined level

moves to a second predetermined level of approximately in the range of about 1 to 5 volts in response to the primary phase generator during the first and second phases, respectively, wherein the second predetermined level is [moves]moved to a third predetermined level of approximately in the range of about 1 to 1.5 volts in response to the secondary phase generator during the first and second phases, respectively, and wherein the third predetermined level is dumped to the first and second gating devices, during the first and second phases, respectively.

20. (Twice Amended) A charge pump, comprising:

an oscillator to generate a first and a second phase during a phase cycle;

a primary phase generator coupled to the oscillator further includes;

an inverter, coupled to the oscillator to receive an input signal from the oscillator based on the phase cycle and providing output signals which are 180 degrees out of phase; and

cross coupled gates coupled to the inverter to receive the output signals from the inverter and outputting signals that are non-overlapping and crossing around high points of their signals during the first and second phases, respectively, and further outputting signals that are non-overlapping and crossing around low points of their signals during the first and second phases, respectively;

a secondary phase generator coupled to the primary phase generator receives the signals that are non-overlapping and crossing around high points of their signals from the primary phase generator;

first and second preboot capacitors coupled to the primary phase generator receives the signals that non-overlapping and crossing around high points and low points of their signals from the primary phase generator;

first and second main pump capacitors coupled to the secondary phase generator, and the first and second preboot capacitors, respectively;

first and second pre-boot pre-charge capacitors coupled to the first and second preboot capacitors;

first and second gating devices coupled to the first and second main pump capacitors,